



UNITED STATES NAVY

MEDICAL NEWS LETTER

Editor - Captain L. B. Marshall, MC, USN

Vol. 21

Friday, 26 June 1953

No. 12

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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The Detection of Chromosomal Sex in Hermaphrodites From a Skin Biopsy

A case of hermaphroditism presents to the physician an exceedingly difficult problem. The tragic status of the patient demands that measures be taken to correct the developmental error, in so far as possible. There is little agreement, however, concerning the etiology of hermaphroditism, the criteria on which a decision as to the dominant sex are to be based, or the management of individual cases.

Painter and Evans and Swezy have shown that in humans, females have an XX chromosome combination while males have XY chromosomes as the sex chromosomes. The Y chromosome is small in relation to the X chromosome. The authors have found that the nature of the sex chromosomes (XX or XY) in an individual may be detected by examining the epidermal nuclei in a small biopsy specimen of skin.

A preliminary general survey of human tissues indicates that the distinctive nuclear morphology, according to sex, is present in man as in many lower animals. With this background, a systematic study of nuclei in human skin was made.

Because others may wish to apply this method of determining chromosomal sex the methods used are described in some detail.

Specimens of skin from 50 female and 50 male subjects were studied. There were 20 biopsy specimens (10 female and 10 male). The remaining specimens were obtained mainly at autopsy; a few came from the operating room. The genital systems of all subjects were normal to the best of the authors' knowledge. The ages of the subjects ranged from newborn to 90 years.

Although the region from which the biopsy specimen is taken seems unimportant for this work, the extensor surface of the forearm was used as a

matter of routine. The area was anesthetized by subcutaneous infiltration of procaine. A small piece of skin, about 0.3 by 0.6 cm., was removed and the wound closed with 2 dermal sutures.

Of the various fixatives tried, the following proved most satisfactory. The specimens were fixed for 24 hours in a modified Davidson's solution. The specimens were then immersed for 24 to 48 hours in 70% alcohol with several changes of solution. If mailing to distant laboratories is necessary, the biopsy specimen should be in 70% alcohol. Routine embedding in paraffin was followed by sectioning at 5 microns.

Sections stained with hematoxylin and eosin were satisfactory for the identification of sex chromatin. Best results were obtained by preparation of the hematoxylin according to the method of Harris as described by Gatenby and Beams. The Feulgen technique, as outlined by Stowell, is also useful because the sex chromatin gives a positive Feulgen reaction because of its desoxyribose nucleic acid content. The nucleolus, containing ribose nucleic acid, is Feulgen-negative.

The sections were studied with an oil immersion objective, attention being directed toward the nuclei of the malpighian layer of the epidermis. A work sheet containing 100 circles representing nuclear outlines is useful. The sex chromatin is drawn in the circle when it can be identified. A minimum of 100 nuclei, selected at random, should be examined in this way and the incidence of visible sex chromatin recorded as a percentage figure.

Female specimens. In most nuclei the sex chromatin is a single, planoconvex body lying against the nuclear membrane. Occasionally the sex chromatin is free in the nucleoplasm or adjacent to the nucleolus. The sex chromatin stains deeply with hematoxylin but there may be a minute pale area within the chromatin mass. In the 50 specimens examined the sex chromatin was visible in from 52 to 85% of nuclei, with an average incidence of 69%. In general it may be said that the sex chromatin can be identified in about two-thirds of the nuclei in 5-micron sections of female epidermis. The real incidence is undoubtedly higher because the sex chromatin will be excluded from the section in some nuclei.

Male specimens. Nuclei of male epidermis do not contain a chromatin mass which is comparable in size to the sex chromatin of female cells. In the 50 specimens studied, from 1 to 14% of nuclei (average 5%) showed a small chromatin mass at the nuclear membrane which may be sex chromatin, although it is difficult to be certain on this point. The evidence available to date indicates that the single X chromosome and the small Y chromosome of male nuclei fail to form a chromatin mass of sufficient size to be distinguished from the general particulate chromatin in most cells. The nucleoli and particulate chromatin are the same in the two sexes.

With some experience in this work there is no difficulty in sorting sections of skin correctly into male and female groups on the basis of nuclear morphology alone.

Although the application of the skin biopsy technique to hermaphrodites is in a preliminary stage, it appears that chromosomal sex is as clear in somatic cell nuclei of hermaphrodites as it is in normal individuals. It is unnecessary to emphasize the possible importance of this observation in the investigative and practical aspects of the complex subject of hermaphroditism.

The authors wish, therefore, to make a special plea for the application of the skin biopsy technique in all cases of doubtful sex. It is especially important to do a skin biopsy test of chromosomal sex in the cases which have been described so thoroughly in the recent clinical literature. A sufficiently large series is required to permit a comparison of the chromosomal female hermaphrodites with the chromosomal male hermaphrodites. Such a comparison must include all the variables from the type of gonad to the psychosexual outlook of the patient. Only a thorough study of this nature, requiring the cooperation of many physicians, will permit an evaluation of the importance of chromosomal sex in hermaphroditism. (Surg., Gynec. & Obst., June 1953, K. L. Moore, M. A. Graham, and M. L. Barr, London, Ontario, Canada)

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Postgastrectomy Syndromes and Their Relation to Technic

Many articles have appeared in the current British and American surgical literature on the subject of postcibal symptoms, and a figure of 20% and over is cited in a recent article in the Lancet as representative of the number of patients who continue to have symptoms after an elective operation for peptic ulcers. This very fact implies that the results vary and are not uniformly satisfactory. As long as a high partial gastrectomy remains the standard treatment for duodenal ulceration, it is imperative that the procedure adopted should endeavor to obtain complete and lasting freedom from symptoms. If the operation results in the substitution of the equally disabling symptoms associated with "dumping syndrome" for the former symptoms of ulceration, the value of such a procedure will fall into disrepute. A figure of 20% failures would seem a sufficiently high one for such a condition.

The symptoms most commonly occurring after gastrectomy are those digestive disturbances collectively alluded to as the "dumping syndrome." The clinical picture varies both in variety and in severity, the main feature being discomfort in the upper part of the abdomen occurring shortly after meals and accompanied by drowsiness and lassitude. Nausea or actual vomiting, flushing of the head and face, and palpitations may also occur.

The incidence and persistence of such symptoms is variously stated. A number of patients may experience only minor postcibal discomfort which usually diminishes within a few months. In some cases the symptoms persist to such a degree as to create a definite fresh physical disa-

bility, making a normal life impossible and preventing the patient from resuming gainful employment. In other cases the symptoms may be most acute in the immediate postoperative period, when a slow and inadequate emptying of the afferent loop results in uncomfortable distention, intolerance of food, loss of weight, and inability to return to that feeling of good health which was promised prior to operation.

Opinion of the causal factors is divided among the following possibilities: (1) A rapid emptying of ingested food into the jejunum occurs. This is actuated by the small capacity of the gastric remnant and its lack of sphincteric control. This abnormally rapid emptying results in hyperglycemia. The hypersecretion of insulin, which occurs as a natural physiologic response, evokes hypoglycemia, the symptoms of which closely resemble those of the syndrome under consideration. (2) Some of the rapidly evacuating gastric contents escape into the afferent loop, causing an obstructive distention of the blind duodenojejunal segment. Similarly, the afferent loop may become uncomfortably distended with bile and duodenal secretion if its outlet is impaired mechanically by faulty technic. (3) The rapid emptying into the efferent loop causes a sudden mechanical distention of the jejunum, and this precipitate and abnormal event is presumed to evoke the symptoms of "dumping."

That there is a definite relation between the occurrence of symptoms and the surgical technic adopted seems to be well substantiated by a perusal of certain published series of cases.

Assuming that mechanical factors are responsible, it would appear that in order to obviate postcibal symptoms, it is essential to adopt a technic that fulfills the following desiderata: (1) It must prevent a too rapid escape of gastric contents into the efferent loop and at the same time prevent any leak into the afferent loop. (2) It must prevent the accumulation of bile and duodenal secretions in the afferent loop, at the same time permitting their easy egress. (J. Internat. Coll. Surgeons, May 1953, R. Charles and B. Rowlands, Ipswich, England)

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Cystic Diseases of the Lung

Cystic diseases of the lungs may be considered to include any abnormal air-containing or fluid-containing spaces not caused by lung destruction. (This definition excludes abscesses, which are areas of destruction due to inflammation or necrotic evacuated tumor.) It includes a wide range of lesions. At one extreme is the single bronchogenic cyst with bronchial epithelial lining. At the other extreme is pure emphysema, with diffuse dilatation of all the alveoli. Between are numerous bronchiectatic cysts, blebs, and bullae, the origin of which may be obscure and the symptoms of which may be those of infection or impaired ventilation.

This article outlines a plan of management which may be applied to all forms of pulmonary cysts. Much of this subject falls into the category of degenerative disease and is of increasing importance as the age of the population increases.

The symptoms of cystic disease are those due to impaired ventilation, those due to infection, and those due to bronchial spasm. In the presence of simple cysts the symptoms of infection predominate; in the presence of emphysema the symptoms due to impaired ventilation predominate; but throughout the scale in any given case there is nearly always at least some element of infection, impaired ventilation, and bronchial spasm.

The manifestations of infection vary. When cystic spaces become grossly infected, they act like and are, in fact, a variety of lung abscess. Cough, purulent sputum, possible bleeding, fever, and toxicity may be present and may be acute, recurrent or chronic, and low grade. The smooth, rounded roentgen appearance generally distinguishes the infected cyst from the abscess. Patients with bullae, blebs, and emphysema are less likely to have infected cystic spaces but show evidence of chronic bronchitis as judged by cough.

Cysts impair ventilation by replacing and compressing normal lung. Dyspnea is the result. This is most likely to be severe in emphysematous patients, and in cases of extreme involvement may prevent even slight exertion or may lead to chronic anoxemia and death. Superimposed bronchitis and pneumonitis often precipitate the most severe episodes by decreasing air flow through the bronchi and by edema of the alveoli.

Bronchial spasm is a less obvious but nevertheless a frequent associate of lung cysts. The wheeze of frank asthma is not usual. Among the simple cysts, spasm rarely plays a significant role, but it is prominent in emphysema. An audible wheeze may or may not be noted either by the patient or by the examiner, but the constant improvement under antispasmodic drug therapy is ample proof of the presence of spasm.

Acute infections are combated with rest, antibiotics, and, when needed, postural and bronchoscopic drainage. An infected cyst rarely requires drainage, for when the acute infection is controlled, excision is preferred to prevent recurrence. Excision is the treatment of choice whenever the cysts are single or when they are multiple and sufficiently localized. Excision not only removes nonfunctioning tissue but allows improved function of compressed neighboring normal tissue.

Chronic bronchial infection, or at least inflammation, is a constant and often severe complication of cystic diseases, particularly in conjunction with emphysema and multiple bullous cysts. It must be treated symptomatically with cough medicaments and expectorants, but in the acute and especially productive phases much can be done with antibiotics. All possible irritants in inhaled air must be removed, and of these cigarette smoke is a chief offender.

Impaired ventilation may be improved in various ways: (1) Increasing the diameter of the bronchial system. (2) Increasing the excursion of the

respiratory motion. (3) Increasing the oxygen content of inspired air by intermittent administration of oxygen via mask. (4) Mechanical methods of forcing oxygen into the alveoli. (5) Surgical excision is indicated when single cysts or localized groups of cysts are impairing ventilation by compression of neighboring functioning lung. Cystic degeneration of segmental, lobar, or even entire lung distribution occurs at all ages, including infancy. Such degeneration represents replacement of lung tissue by multiple blebs and bullae and when infected may be indistinguishable from multiple bronchiectatic abscesses. When compression of lung due to collection of air in the pleura occurs, mechanical removal and prevention of further air leak are imperative. (6) Obesity causes a mechanical increase on the entire cardiorespiratory system and should be regulated accordingly. (7) Combinations of ephedrine, aminophyllin, and phenobarbital (luasmin, tedral, et cetera), administered by mouth to combat bronchospasm are surprisingly productive of improved ventilation, often in the clinical absence of wheeze or other manifestations of obstruction. Nebulized epinephrine and similar substances help. The nebulized drugs and antibiotics may be administered with oxygen. (J. Internat. Coll. Surgeons, May 1953, F.M. Woods)

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Testicular Tumors

The classification of testicular tumors arrived at in this study is based on both the morphologic and the biologic characteristics of the tumors. The primary division of testicular tumors is into (1) the germinal tumors, which arise from germ cells and make up 96.5% of this series, and (2) the non-germinal tumors, a miscellaneous group of neoplasms arising from the non-germinal elements of the testis and comprising 3.5% of this series. The germinal tumors are composed of any one or any combination of four morphologic tumor patterns: seminoma, embryonal carcinoma, teratoma, and choriocarcinoma. On the basis of biologic behavior and apparent morphogenesis, the 15 possible morphologic varieties of tumors can be put in 5 groups: I. seminoma, pure; II. embryonal carcinoma, pure, or with seminoma; III. teratoma, pure, or with seminoma; IV. teratoma with either embryonal carcinoma or choriocarcinoma or both, and with or without seminoma; V. choriocarcinoma, pure, or with either embryonal carcinoma or seminoma or both.

The nongerminial tumors in this series included interstitial-cell tumors, androblastomas, capsular fibromas, adrenal-cortical-rest tumors, neurilemmoma, adenomatoid tumor, and sarcoma. Only the first two mentioned are specifically gonadal; the remainder resemble their counterparts elsewhere in the body.

Teilum has emphasized the fact that the tumors of the testis and ovary are in large part homologous. All germinal tumors of the testis have counterparts in the ovary. Seminomas of the testis are morphologically identical with the dysgerminomas of the ovary, while undifferentiated embryonal carcinomas, teratomas, and choriocarcinomas are found in both testis and ovary. A rare interstitial-cell tumor is found in the hilus of the ovary. Androblastomas are entirely comparable to the various types of ovarian arrhenoblastomas. The incidence of these homologous tumors, however, differs greatly in the two sexes. Adult teratomas (dermoids) are among the most common ovarian tumors, yet their testicular counterparts are relatively rare. Seminomas and embryonal carcinomas are common testicular tumors with rare ovarian homologues. If the morphogenesis of germinal tumors in both sexes should be, as the authors propose for the male, differentiation from embryonal carcinoma to teratoma, it would appear that something in the female environment predisposes to adult somatic differentiation, while the male environment fosters undifferentiated malignant growth. This possibility suggests that some chemotherapeutic agent or hormone might be found useful as an adjunct to surgery and radiation therapy in an attempt to increase differentiation and thereby reduce the malignancy of the undifferentiated germinal tumors.

Considering these testicular and ovarian tumors, it appears that the ovary is much more versatile in forming tumors than the testis. No counterparts of the ovarian cystadenomas, the granulosa-theca-cell tumors, and the Brenner tumors have been discovered in the testis.

From this study it is apparent that several clinical and laboratory procedures are of particular value in diagnosing and treating testicular tumors.

1. The history should deal specifically with the presence or absence of pain caused by the tumor.
2. Physical and radiological examinations should be carried out to determine the presence of metastases.
3. A pre-operative examination for the presence of urinary gonadotropin should be made. If possible this test should distinguish between pituitary and chori-
onic gonadotropins.
4. If the presence of a tumor within the testis is confirmed at surgery, the testis and cord should be removed together.
5. Gross examination of the operative specimen by the pathologist should include the cutting of multiple parallel total slabs through the testis noting any extra-
testicular extension of the tumor.
6. Blocks for microscopic study should be taken both from typical regions of the tumor and from any atypical foci, especially hemorrhagic foci that may be evidence of a choriocarcinoma.
7. The cord should be examined for evidence of extension or metastases. Any identifiable lymph nodes along cord or in a specimen from a radical operation should be blocked.
8. Microscopic study should determine:
(1) tumor type, (2) presence or absence of extratesticular extension, (3) presence or absence of vascular invasion by tumor, (4) type of stromal response to seminomas, (5) state of interstitial cells, (6) metastases to lymph nodes.
9. At least 2 postoperative tests for urinary gonadotropin

should be made. The first test should not be earlier than 7 days after operation. (Cancer, May 1953, F. J. Dixon and R. A. Moore)

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Caseation Necrosis in Human Brucellosis

A case of human brucellosis is presented with an unusual histopathologic response: caseation necrosis in a lymph node.

A review of the literature and of pathologic material from the Armed Forces Institute of Pathology indicates that the inflammatory reaction to the Brucella organisms is, in general, nonspecific.

Throughout the literature, the role of the reticulo-endothelial system in the pathologic response to Brucella is stressed. It has been known for several years that Brucella tends to localize in organs containing abundant reticulo-endothelial tissue, namely, the bone marrow, liver, spleen, and lymph nodes. Similarly, the characteristic "granuloma" is featured by the presence of large mononuclear cells of reticulo-endothelial origin, often with associated peripheral lymphocytosis and monocytosis. This reaction is not specific for brucellosis because the same basic pattern is seen in such diverse conditions as tuberculosis, syphilis, the mycoses, lymphogranuloma venereum, sarcoidosis, Hodgkin's disease, and tularemia.

Chronic granulomatous inflammation, although studied extensively by many workers, remains something of a pathologic enigma. The morphologic characteristics, the source of its predominating cell, and the various injurious agents which produce this distinctive change are well known. The common stimulation, shared by each of the injurious agents, which sets into action this reticulo-endothelial response and eventually results in the familiar granuloma remains an unanswered problem.

The question of necrosis, complete or partial, in these granulomatous nodules of brucellosis frequently appears in reviewing the literature on the subject.

The patient in this report presented the classical findings of acute brucellosis: recent exposure to a source of infection, generalized lymphadenopathy, fever, malaise, nausea, vomiting, diarrhea, weight loss, leukopenia, relative lymphocytosis, hepatic inflammation, rising titer of agglutinations for brucellosis, and positive blood cultures for Brucella. There can be no doubt of the diagnosis of brucellosis. The clinical response to therapy with aureomycin, particularly the regression of the lymphadenopathy, adds strong support to the belief that the lymphadenopathy was due to infection with Brucella. It seems quite likely that the caseation necrosis present in this case was also a manifestation of this infection. Recently the unusual co-existence of brucellosis and tuberculosis has been reported. In that case, the tubercle bacillus was obtained by culture of a bone marrow aspirate. In the authors' case, the caseation necrosis in the lymph node and the positive tuberculin test suggested the possibility of an associated tuberculous in-

fection. It is believed, however, that the normal chest roentgenogram, the absence of acid-fast bacilli in the lymph node, and the lack of growth of tubercle bacilli in the culture of the bone marrow aspirate rendered this possibility unlikely. A review of the literature failed to reveal any previous substantiated report of caseation necrosis in human brucellosis; this case would seem to confirm the fact that this may occur.

The tendency for brucellosis to relapse despite present-day antimicrobial therapy is also represented in this case. The initial course of aureomycin served to reduce the clinical symptoms to a minimum but did not eliminate the infection, as shown by the positive blood cultures within a month after cessation of therapy. The second course of aureomycin transiently cleared the blood stream of the organisms but again did not effect a "cure" of the disease. This course illustrates the chronic nature of the disease and the fact that infection may persist in the absence of positive clinical and serologic evidence of activity. In the management of brucellosis, emphasis should be placed upon careful and long-range follow-up observation with repeated courses of one or more antimicrobial drugs. (Am. Rev. Tuberc., June 1953, J. B. Crow, D. M. Tormey, W. J. Redner, Jr., and B. H. Sullivan, Jr.)

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Contrast Substances for Angiocardiography

This article discusses Diodrast, Neo-Iopax, and Urokon Sodium with reference to the side effects related to their angiocardiographic use.

Regardless of the contrast substance employed, angiocardiography results in a profound physical and, therefore, emotional experience for the patient. An attempt was made to assess the nature of the immediate reaction in patients undergoing angiocardiography. Shortly following each injection, cooperative adult patients answered a questionnaire given by a physician. Diodrast, Neo-Iopax, and Urokon in concentrated solutions were each used in 25 examinations, consisting of 2 injections of the usual 40 to 50 cc. dose of the agent about 15 to 20 minutes apart. For purposes of estimating the incidence of vascular thrombosis, only patients in whom a "clean" percutaneous insertion of the needle had been made and in whom a 1-week follow-up inspection was possible were accepted for the study.

From the patient's point of view, angiocardiography is an unpleasant experience. Fortunately, the subjective reaction is usually of brief duration. In the adult with mediastinal or pulmonary disease angiocardiography may obviate the need for thoracotomy. This is particularly true in certain cases of pulmonary carcinoma where contrast visualization is able to demonstrate overwhelming evidence of inoperability. How false the "conservatism" of the physician who spares his patient the discomfort of angiocardiography, but refers him for predictably fruitless thoracotomy!

A comparative study of the side effects following angiocardiology with Diodrast, Neo-Iopax, and Urokon allows certain generalizations. The immediate reaction to Diodrast is featured by an intense sensation of heat and weakness. The reaction to Neo-Iopax is, in addition, frequently marked by a severe throbbing headache, coughing, and a sense of thirst. Based upon this study and other observations, it is the authors' opinion that the subjective reaction to Urokon is the mildest (least unpleasant) of the three. Although the iodine content of the three substances is not identical (Diodrast 34.9%, Neo-Iopax 38.6%, and Urokon 46.1% iodine in the solutions employed for angiocardiology), the authors have been unable to observe marked differences in the radiopacity produced during angiocardiology. If angiocardiology in the child with congenital heart disease is excluded, all three agents appear to be reasonably safe. Because the subjective reaction with Urokon appears to be definitely milder than that encountered with either Diodrast or Neo-Iopax and because it appears to be at least comparably safe, the authors believe that Urokon is probably the best available contrast substance for angiocardiology.

Thrombosis of the vein injected for angiocardiology is probably best regarded as a "necessary evil." The patient who receives but one injection has a 50-50 chance of escaping this minor sequela while the odds in favor of thrombosis are 4 to 1 in those receiving 2 injections. The patient should be so advised and reassured that symptoms will be both mild and temporary. (Radiology, May 1953, C. T. Dotter, M. S. Wetchler, and I. Steinberg)

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Cancer Detection

Cancer detection is early cancer diagnosis and implies discovery of cancer before it has caused symptoms which would bring the patient to the physician. Because early, presymptomatic cancer is most likely to be localized and curable cancer, programs to promote cancer detection occupy a prominent position in current cancer control efforts.

In the absence of a satisfactory single screening test for cancer, there is today no short cut to cancer detection. Present methods vary from rapid examinations restricted to major cancer-bearing and easily accessible parts of the body (skin and superficial glands, mouth, breasts, uterus, rectum, and prostate) to comprehensive diagnostic examinations.

An important medium for the development and testing of methods has been the cancer detection center established in large numbers in the United States and Canada during the past 10 years with the support of voluntary and public health agencies. While the ultimate effectiveness of these centers is not yet firmly established, they are affording an opportunity to study the value of the cancer detection program and its potential role in medical care.

This article presents the findings of 2,111 initial examinations in one such center and a preliminary analysis of its potentialities as part of a total adult health service.

The routine consisted of family and personal history, complete physical examination, and the following laboratory procedures; hemoglobin determination, white blood cell count, blood smear, and differential, sedimentation rate, urinalysis with microscopic examination of the sediment, and x-ray film of the chest. All women had vaginal and cervical cytologic smears by the Papanicolaou technique. Beginning in 1948, proctosigmoidoscopy was routine for all examinees. Biopsy was available as part of the clinic facility. When the need for additional diagnostic procedures was indicated these were performed at the New York Hospital or other hospital clinics, or by private physicians, and the results included in the clinic record.

The typical examinee attracted by the detection service was married, was native-born, white, of foreign-born parentage, had a mother born in Central or Eastern Europe, and reported his or her religion as Jewish. The reasons why the center was utilized particularly by these groups are not known, but the selection that occurred undoubtedly influenced the findings reported.

Among the general motives that attracted applicants to the center, fear of cancer undoubtedly ranked near the top. This is suggested by the fact that 38% of the women and 31% of the men examined had a positive family history of cancer. These ratios are considerably higher than the ratio of 12% with a family history of cancer reported for a sample population not selected on the basis of interest in cancer detection (Veterans Administration Hospital general admissions) and suggests that examinees, especially women, tend to be self-selected on the basis of fear of an inherited susceptibility.

The clinical procedures which are most effective in the cancer detection program do not require a specialist but are suitable for the general practitioner's office. Their success requires an alert and interested physician and adequate time for the examination. In the emphasis on the role of the physician, this type of program differs substantially from multiphasic screening programs which rely primarily on laboratory procedures. However, reliable laboratory facilities for Papanicolaou smear readings, biopsy, and x-ray services must also be available to complete the cancer detection examination. If both physicians and laboratories that meet these standards can become widely available, the goal of the American Cancer Society to make "every doctor's office a detection center" will be a reasonable development in medical care, not only for cancer but for general adult preventive medicine as well. (Am. J. Hyg., May 1953, E. Day, T.G. Rigney, and D.F. Beck)

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Gamma Globulin

Approximately 6% of human plasma is protein. One of the important properties of proteins is that they are made up of very large molecules.

Whole blood is used to replace all of the elements of the blood which have been lost in hemorrhage. The cells in whole blood, however, are perishable and cannot be kept much longer than 3 weeks. Therefore, if blood is to be stored any length of time, it is necessary to separate the cells from the plasma. Plasma may be kept by lyophilizing or freeze-drying it. If the plasma is frozen and then placed in a vacuum chamber, the water that composes the ice in the frozen plasma may be changed into the vapor state without ever melting or going through the liquid phase. This is known as sublimation. If this is done, the plasma proteins will not be denatured and all the water can be removed, thereby making it possible to store the dried protein at room temperature for many years without causing it to be denatured.

The ability of plasma to retain blood within the circulation is due chiefly to one of its protein constituents--albumin. The large albumin molecules attract and hold water in the blood stream, particularly in time of shock, when there is a tendency for the water to leave the blood stream.

Fractionation of plasma. Plasma from the blood of 2,000 donors is pooled in a 125-gallon tank. Alcohol and various buffer solutions are added to the plasma and Fraction I, or fibrinogen, is precipitated.

The second precipitation of plasma proteins produces gamma globulin. The name "gamma" merely refers to the fact that the proteins move with different speeds when an electric current is passed through them. The alpha molecule is the fastest globulin, beta is next, and gamma is the slowest of the moving molecules. The gamma globulin molecules are important, however, in that most of the antibody or protective action of plasma is concentrated in or attached to these molecules.

Action of gamma globulin. Just how the antibodies work or how the globulin functions as an antibody is not clear. The gamma globulin molecules that circulate in the blood stream of a newborn child appear no different from those that circulate in the blood stream of an adult as far as can be determined. They have the same weight, shape, and speed. However, the gamma molecules of an adult possess properties which make it possible for him to neutralize, or coat, or by some other means inactivate various viruses. When a child, whose antibodies have no protecting action, contracts a virus disease such as measles, some change takes place in the part of the body where gamma globulin is produced so that every molecule produced possesses the ability to defend the person against this particular virus disease should it ever invade the body again. This process can continue indefinitely as long as the person recovers from the disease.

Occasionally, when a person has been exposed to a disease and has not produced these antibodies, it is desirable to borrow protection by giving him a transfusion or injection of antibodies produced by some other person or at times by certain laboratory animals. The human gamma globulin from one person when transfused into another person seems to survive and be effective for about 6 weeks.

The fractionation of human plasma was undertaken to produce albumin as a shock-combating substance that could be transported more easily than plasma. When this was achieved, the other proteins were acquired as by-products. Investigation soon showed that Fraction II, or gamma globulin, possessed the antibodies described above and could be used to produce passive immunization for many virus diseases. It was further shown that if a small dose were given--too small to prevent the development of the disease but large enough to prevent its being serious--then the person would have the disease without being very ill and could produce his own antibodies and acquire a permanent active immunity. This led to the use of gamma globulin in the prevention or modification of measles. From 1944 through 1952, over 4 million 2-cc. vials have been distributed for this purpose by the American Red Cross. In the past 2 or 3 years, it has been shown that the gamma globulin also contains antibodies against infectious hepatitis. When gamma globulin is put into a 16% solution with certain other substances to buffer it, it is called immune serum globulin.

Gamma globulin and polio. About 2 years ago, scientists discovered that at some time before the viruses which cause polio enter the nerve tissue they circulate in the blood stream. Physicians wondered if it would be possible to destroy the viruses while they were still in the circulation. This led to the gamma globulin experiments at Provo, Utah, in 1951 and at Houston, Texas, and Sioux City, Iowa, in 1952. Preliminary work with animals had demonstrated the possibility that gamma globulin, if injected in time, could neutralize or modify the action of polio viruses so that, although the disease was not prevented, the paralysis might be.

To test this theory, approximately 55,000 children were injected--50% were given gamma globulin and the other 50% were given an innocuous solution of gelatin. The persons injecting the material and the persons receiving it did not know which solution was being given. To evaluate the results, all the cases of paralysis from polio which developed among the 55,000 children were studied. If there had been no difference in effect between gamma globulin and gelatin, then there should have been an equal number of cases of polio in the two groups. Actually, there was a considerable difference. During the period of the second through the fifth week following the injection, 39 cases of paralysis developed among the children who received gelatin and only 7 among those who received gamma globulin. During the first week following the injections, there was an equal incidence of polio in both groups but the paralysis that developed in the children who had received gamma globulin seemed to be milder and half of them recovered without any residual

paralysis. After the fifth week, the number of new cases of polio in each group was identical, because most of the injected globulin had been worn out or dissipated in that time.

Availability. The greatest difficulty in extending the gamma globulin program throughout the United States will be (1) the limited supply, and (2) the inability to provide protection for all susceptible persons before they are exposed without giving the protection so far in advance of exposure that it will have disappeared before it can be effective.

In order to make as much gamma globulin available as possible for the coming summer, the Red Cross has turned over to the national pool, its entire supply remaining from the salvage of World War II plasma, plus the globulin resulting from current production. In addition, it is financing the packaging in bulk form of globulin made available by the Defense Department.

The National Foundation for Infantile Paralysis has contracted to purchase as much of the commercial supply as will be made available to it and will turn it over to the national pool for allocation without charge. The best conservative estimate of the available supply of gamma globulin for this coming season is a total of 8 million cc. Approximately 2 million cc. of this amount will be required for measles and hepatitis. According to the figures of last year's study, the average polio prophylactic dose for children was approximately 7 cc. By this computation, something less than 900,000 doses will be available for use this summer.

Every bottle of blood that is used in the gamma globulin program provides albumin for defense use and gamma globulin for prophylactic use and for the control and modification of virus diseases, such as measles, hepatitis, and poliomyelitis. (Am. J. Nursing, June 1953, S. T. Gibson)

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The Scleral Resection Operation for Retinal Detachment

As a whole, the subject of idiopathic retinal detachment has become clarified to the point where, in the usual fresh case, the pathologic conditions are well understood and the break-closing operation is highly effective in bringing about a lasting cure. Unfortunately, in a number of eyes with fresh idiopathic detachments and in a larger number of eyes in which one or several diathermy operations have been performed without success, the mechanical conditions are so different from those prevailing in the usual case that the principle of closure of all existing breaks by electrocoagulation of the underlying choroid, followed by drainage of the subretinal fluid, is either inapplicable or inadequate.

This situation was realized by Lindner as early as 1933, at the end of the first 5 years of the surgical break-closing era, and well expressed in his statement that "there are detachments in which the currently used meth-

ods are never or hardly ever successful." Lindner here referred to detachments with fixed retinal folds, retina-adherent strands in the vitreous, and cases in which the retina assumed a funnel shape at a very early stage. Cases showing any of these three features were prognostically unfavorable, that is, unsuited for diathermy, regardless of whether the unusual features had developed before or after diathermy operations. A special case of fixed folds was represented by the very gross starfolds originating from a cautery puncture after Gonin.

Credit goes to Lindner for having recognized the applicability to these unusual situations of the principle embodied in the globe-shortening operation devised and first reported by L. Mueller in 1903.

The authors have performed scleral resections on 150 eyes with retinal detachment. Some of the experiences gained in the course of the treatment of these cases are presented in the hope that they may contribute toward further elucidation of the principles involved and toward further improvement of the functional results achieved with this operation. The authors' experiences are presented under 5 headings: (1) Indications, (2) operative technique, (3) complications, (4) causes of failure, and (5) results.

A survey of patients operated at least 1 year prior to this survey reveals that there are three types of results: 1. Cures in the sense of complete reattachment except for small areas of slight elevation within barrages (Hughes). 2. Improvements in the sense that, after a scleral resection, reattachment of at least one quadrant occurred and the retina became stabilized in that position, the reattachment in most of these cases being associated with a gain in vision from hand movements or questionable finger counting to at least 5/200. 3. Failures in the sense that no beneficial effect of the scleral resection could be recognized and the disease progressed to a total or almost total detachment with the tissue changes characteristic of the terminal stages of untreated detachments.

The authors believe that the improvements after scleral resections are real and of practical value. Lindner considered them as accomplishments: "If the upper part of the retina remains attached, the preservation of the lower field and the prevention of complicated cataract, or of other unfavorable sequelae would qualify even a single operation as serving its purpose. One should not forget that all these eyes were considered practically lost and would have become worse."

Of 150 consecutive, unselected cases operated upon by the authors, 46 were cures, 14 improvements, and 90 failures.

In the case of the cures, it was possible, in almost every instance, to determine the outstanding pathologic feature which was alleviated or corrected by the scleral resection.

In a good many of the failures, the visibility was not good enough or the fundus picture not clear enough to correlate the failure of the operation with any specific feature of the pathogenetic mechanism. Tabulation of the failures with regard to that latter factor was therefore not attempted.

Among the failures, but in a group by themselves, was a small number of cases of advanced diabetic retinopathy with bizarre detachments of the retina and strands in the vitreous which could be readily seen with the slitlamp and often with the ophthalmoscope. The other usual features of diabetic retinopathy were also present, such as masses of hard exudate, retinal hemorrhages, and small aneurysms.

A more detailed evaluation of the results will be the subject of a subsequent publication. In the brief form in which they are presented in this article they tend to confirm the now widely held view of the effectiveness of the scleral resection operation in certain specific situations. (Am. J. Ophth., May 1953, D.K. Pischel and P.C. Kronfeld)

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A Stainless Steel Mesh Prosthesis for Immediate Replacement of the Hemimandible

An increasing number of jaw resections are being performed for malignant disease. Consequently, numerous techniques for immediate or subsequent mandibular replacement have been described. This operation is indicated for benign and malignant tumors of the mandible, osteomyelitis, radiation necrosis, traumatic loss, or incidentally during en bloc dissections for tumors of contiguous tissues adjacent to or involving the mandible. In the resection of segments of the lower jaw, immediate fixation of the fragments is necessary to prevent deviation which results from unopposed muscle pull and scarring. Such displacement is not only disfiguring, but often results in feeding problems and respiratory distress.

The ideal replacement of resected portions of mandible is autogenous bone. New advocated the use of iliac crest cut to the shape desired. Conway preferred a rib graft fractured and bent at its mid-point to simulate the angle of the jaw. Marino and associates devised an ingenious method, that of inserting cancellous bone chips from the ilium into the defect, and molding it from within with an acrylic intraoral splint and from without by a plaster cast to retain the shape of the mandible. It has been emphasized by Conway that, whenever possible, the condyle and upper portion of the ramus of the mandible should be preserved to facilitate reconstruction.

Immediate bone grafting is not always feasible. The mucosa of the mouth is often entered, introducing oral contamination which precludes successful grafting. If a considerable amount of mucous membrane is resected, the insertion of a graft may prevent satisfactory primary closure

of the mucosa. In resection of the mandible for malignant tumors, immediate bone grafting is inadvisable; an adequate period of time must elapse to insure nonrecurrence before plastic repair is considered. In cases where large doses of irradiation are employed in the treatment of tumors, and sections of the mandible are resected for recurrent cancer or osteoradionecrosis, the radiation changes in the soft tissues prevent the use of an immediate bone graft.

After partial resection of the mandible, the displacement of the fragments may be prevented by fixation of the upper and lower jaws postoperatively. However, if no internal replacement is provided, there is loss of contour of the face, and later bone grafting is rendered difficult by contracture of the soft tissues. Furthermore, the retraction and fibrosis of the tissues will make it impossible to place the transplanted bone in proper relationship to the muscles of mastication. In order to maintain normal anatomic relationships, a variety of prosthetic appliances have been devised for temporary or permanent mandibular replacement. After extensive animal and chemical experiments, Venable and Stuck demonstrated that three metals were sufficiently inert to be utilized in surgery. These are Vitallium, tantalum, and "18-8-SMO" stainless steel.

This article reports the use of an inexpensive, easily constructed, light, rigid prosthesis to replace nearly one-half of the mandible resected for an extensive ameloblastoma in a 13-year-old boy.

Heavy stainless steel mesh (No. 20M) was used. Based on clinical measurements and roentgenologic studies, a drawing of the projected prosthesis in actual size was traced on the steel mesh. The tracing was then enlarged 1 cm. on all sides to allow for folding of the mesh, and 1.5 cm. anteriorly for attachment to the mandible. The mesh was cut with heavy scissors and, except for the anterior 1.5 cm., the edges were infolded with pliers. Care was taken to reproduce the angle accurately. The vertical portion was constructed shorter than the normal mandible with no attempt to replace the condyle. The completed prosthesis, prepared in a few minutes immediately prior to operation, was relatively light, inexpensive, and readily autoclaved. With the edges folded over, it was rigid and strong.

After removal of the specimen, the prosthesis was placed into the defect, and was fixed anteriorly to the mandible by two wire ligatures passed through the open portion of the mesh and the drill holes in the mandibular fragment. The periosteum was sutured over the implant and the wound was closed. (Surgery, May 1953, J. N. Attie, A. Catania, and C. B. Ripstein)

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Studies on Excretion of Antibiotics in
Human Saliva (Aureomycin)

Excretion of penicillin, streptomycin, and chloramphenicol in the saliva, a phenomenon of significance in the prophylaxis of bacteremia caused by tooth extraction, has been the subject of previous investigations by the authors. To date, only one similar study has been reported on aureomycin; it concerns excretion of aureomycin in the saliva following oral administration, in which measurements of concentration were done at only three time intervals. The purpose of this study was to measure and compare the concentration of aureomycin in the blood serum and in the saliva at various intervals following intravenous administration.

Adult patients who had not been on antibiotic therapy for at least 10 days were selected from the ward of the medical service. Another group of subjects chosen from laboratory personnel were used as controls; no antibiotics were administered to them. A single dose of 100 mg. of aureomycin hydrochloride with sodium glycinate buffer was administered intravenously to each member of the experimental group, and the concomitant levels of aureomycin in the blood serum and saliva were measured at various intervals after administration.

Intravenous injection of aureomycin was followed by excretion of aureomycin in the saliva within 15 minutes. The highest concentration of aureomycin in the saliva was observed at the end of the first hour after administration; by the end of the second hour there was a 40% drop in aureomycin concentration.

At the end of the fourth hour there seemed to be a secondary rise in aureomycin in the saliva to a concentration almost equal to the peak attained at the end of the first hour; this occurred even though the concentration in the blood serum during this interval was falling sharply. Possibly the secondary rise was merely an accidental variation within the range of experimental error, or a true function.

After the fourth hour there was a gradual drop in concentration of aureomycin; at the end of the sixteenth hour measurable amounts were still present; at the end of 24 hours no aureomycin could be detected. (Journal of Dental Research, June 1953, I. B. Bender, R. S. Pressman, and S. G. Tashman)

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Combined Vulcanite and Acrylic Denture

With the almost universal acceptance of the copolymer resins as denture base materials, the esthetic and lifelike qualities of prosthetic restorations have tremendously improved. Probably no one would want to go back

to the days of vulcanite, and yet as a denture material it has a certain redeeming quality which modern resin materials seem to lack. This is, its seeming ability to be more adhesive than the acrylic resins under less favorable conditions. Whether this is because of the character of the mucous film which forms between the tissue and the vulcanite, or whether the difference of texture of the two materials makes the vulcanite more retentive is not known, but clinically it has shown itself superior in this respect.

Patients formerly complained of "rubber sore mouth"; now they complain of burning and irritation from wearing acrylic dentures. On clinical examination some will show little sign of inflammation. Others show definite inflammation and chronic lower ridge soreness. The first procedure is to determine which of several factors might be the cause. If the dentures are built at too great a vertical dimension, or poorly articulated, or out of centric relation, the patient will show evidence of trauma. Pressure on the palatine foramina or the mental foramina will cause burning or some numbing sensation. Improperly cured bases are irritating and should be reprocessed. These are some of the mechanical and chemical considerations.

Systemically, the presence of anemia, diabetes, and possible avitaminosis, particularly lack of vitamin C and the B complex should be ascertained. A high blood sugar with no spillover into the urine will still cause the same mouth conditions seen in a true diabetic patient. If an allergy to the material is suspected, it can be checked by placing a small flat piece of the same acrylic under a piece of adhesive tape on the inside of the upper arm.

Having eliminated all of these possibilities, however, there is still the occasional patient who has allergy symptoms but gives a negative patch test. In many of these patients, the author lined the dentures on the tissue surface with 0.001 tinfoil and found that the symptoms disappeared. This, then, seems to be a sensitivity to something under the denture but not to surfaces which are exposed to air and saliva. Changing to a metal or vulcanite base with acrylic "topsides" has eliminated the trouble in most of these patients.

In these cases and in those with very flat, sensitive lower ridges and large inter-ridge spaces, the author has had very gratifying results by using a vulcanite baseplate on which the acrylic resin is processed similar to the old double vulcanization technique. (Journal of Prosthetic Dentistry, May 1953, S. H. Payne)

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Public Health Aspects of Electronic Food Sterilization

Immediately following World War II, the Samuel Cate Prescott Laboratories of Food Technology at the Massachusetts Institute of Technology instituted an intensive research program dealing with the cold sterilization of foods,

drugs, biologicals, tissues, milk, water, and sewage by means of high energy radiations. In the first phase of this research, high energy x-rays were used (2 to 3 Mev). The penetration of these radiations into matter is exponential and relatively great, but the efficiency of conversion of the primary electron beam (or cathode ray beam) is very small, in the order of only 3 to 5%. The remainder of the energy is converted to heat in the target. Hence, in practical terms, relatively long periods of time are required to bring about sterilization by means of x-rays produced in a particle accelerator.

If the primary electron beam (namely, cathode rays) is used as the ionizing agent, there is a much better efficiency of utilization of energy, approaching 75%. However, the penetration of cathode rays into matter is finite and considerably less than with x-rays. The penetration of cathode rays is approximately 1 cm. for each 2 million volts of energy.

Particle accelerators are now being developed that are capable of reaching higher energy levels, and because the efficiency of utilization of cathode rays is relatively great, sterilization can be accomplished by this means in a matter of seconds or fractions thereof.

A great amount of attention is presently being given to the possible utilization of waste fission products as a source of ionizing radiations. The importance of the utilization of such fission products is concerned with the source of the energy and not with the type of radiation.

The potentialities of ionizing radiations as a means of cold sterilization may be classified under the following headings:

1. Complete sterilization and surface sterilization of foods.
2. Pasteurization of milk.
3. Sterilization of water.
4. Destruction of insects in all stages.
5. Destruction of Trichinae.
6. Sterilization of drugs and biologicals.
7. Sterilization of blood.
8. Sterilization of human organs for subsequent transplants.

During the past 7 years it has been shown that all kinds and types of micro-organisms can be destroyed with ionizing radiations. Whereas radiations of this kind frequently produce undesirable flavors in foods, there are indications that these changes may be prevented by the incorporation of certain chemical compounds. Before this method of sterilizing food can be approved by government agencies for commercial use, extended toxicological studies are necessary. (Am. J. Pub. Health, May 1953, J. T. R. Nickerson, B. E. Proctor, and S. A. Goldblith)

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The Medical Officer United States Coast Guard

The U. S. Coast Guard does not have a medical corps similar to those which exist in the U. S. Army and the U. S. Navy. It derives its medical, dental, and nurse officers from the U. S. Public Health Service. This affiliation has existed since the early days of the Revenue Cutter Service, the predecessor of the present U. S. Coast Guard. The Act of Congress of July 16, 1798, which established the Marine Hospital Service, later to become the U. S. Public Health Service "was an act for the relief of sick and disabled seamen." The word "seamen" was interpreted to include the personnel of the Revenue Cutter Service.

The medical, dental, and nurse officers are commissioned officers in the U. S. Public Health Service. The majority of these officers prior to assignment to Coast Guard duty have served in Public Health Service hospitals and clinics where they became cognizant of the Medical Division at Coast Guard Headquarters, with its responsibility for planning and implementing a good health program for all personnel. The Public Health Service clinics and hospitals are always ready to receive a patient from a ship or shore station, when available diagnostic facilities or nursing care are not adequate to give the patient his best chance for recovery. Should disease or injury strike a Coast Guardsman, and transporting him to the nearest Public Health Service facility may endanger his chances for full recovery, the medical officer has the authority to use local hospitals and specialists until the condition of the patient permits safe transfer to a service hospital.

Due to the nature of the work the Coast Guard performs, the duties of the medical and dental officers are varied. Although the principal peacetime mission of the Coast Guard is maritime law enforcement and marine safety, there has evolved through the years a broad humanitarian phase of service which is extended to individuals or groups of individuals in distress not only on the sea, but also on land.

In time of war, the medical and dental officers' duties are similar to their counterparts in the Navy. In 1945, during World War II, 636 Public Health Service officers were on full time duty with the Coast Guard. Of this number, 409 were medical; 190 dental; and 37 nurse officers.

The peacetime assignments fall into two general categories: shore station and ship assignments. The duties at the various shore stations are predominantly clinical in nature.

To support the medical and dental officers on shore and sea duty, and to serve on independent duty at Coast Guard units not having a medical officer, a corps of hospital men is maintained by the Coast Guard. They are enlisted personnel and at present number 368. Training of these men is accomplished at the Hospital Corps School, Groton, Conn. Men seeking advancement are given the opportunity for further training at schools operated by the Navy Department.

The dental program of the Coast Guard attempts to give complete dental care to all personnel.

A cooperative program between the Coast Guard and the Public Health Service hospitals of giving medical advice to ships at sea, by radio, has proved very effective and has saved the lives of many individuals. All Coast Guard radio stations accept and transmit messages of this nature without charge. Most stations have prearranged direct communications to a Public Health Service hospital or clinic. By this means, a rapid handling of medical advice messages is possible. If the condition of the patient warrants, it is possible at times for the U. S. Coast Guard acting in cooperation with the Public Health Service to dispatch a medical officer to the ship via cutter or airplane or to send an ambulance plane to pick up the patient and transport him to a hospital. (Mil. Surgeon, June 1953, Assistant Surgeon General J. F. van Ackeren, U. S. PHS, Chief Medical Officer, U. S. C. G.)

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From the Note Book

1. Two of the Bureau's scientific exhibits displayed at the recent American Medical Association meeting in New York City won top awards for the Section on Military Medicine. The award-winning exhibits were "Amphibious and Field Medicine," and "Medicine and Research in Diving." Only two awards are made for exhibits in any one section. The top sectional award, The Certificate of Merit, was awarded the exhibit "Amphibious and Field Medicine." Honorable Mention, the other sectional award, went to the exhibit, "Medicine and Research in Diving." (TIO, BuMed)

2. The senior scientists of the Navy's East Coast research facilities met in a 2-day conference, June 17-18, 1953, at the Navy Underwater Sound Laboratory, New London, Conn. The agenda of the conference was generally concerned with research problems and methods of project coordination. Various scientific and research reports were discussed, as were Naval Research Advisory Committee reports. (TIO, BuMed)

3. An Institute on teaching and improving esophageal speech will be held in Cleveland, Ohio, August 10 through 16 at The Cleveland Hearing and Speech Center. This Institute, the second one of Voice Pathology, is being sponsored by the American Cancer Society, National Cancer Institute of Institutes of Health, the Office of Vocational Rehabilitation, the Cleveland Otolaryngological Society, the Cleveland Academy of Medicine, and the Western Reserve University School of Medicine. Nonspeaking laryngectomized persons are invited to attend without charge. They may be sent by surgeons, cancer societies, societies for crippled persons, and rehabilitation services.

4. A survey of 150 cases of magnet extraction of intraocular foreign bodies by anterior and posterior routes appears in the American Journal of Ophthalmology, May 1953, J.S. Shipman, J.H. Delaney, and R.H. Seely.
5. The decrease in the death rate from tuberculosis since 1947 can be attributed primarily to improved medical and surgical treatment. The decrease in the death rate has not been accompanied by a corresponding decrease in the development of new cases. Many active cases remain undetected and are a source of new infection. (Am. Rev. Tuberc., June 1953, D. T. Smith)
6. Intravenous anesthesia plays an important part in prosthetic dentistry especially as a part of immediate denture service. Fear of painful surgery can be eliminated: the apprehensive, the aged, the debilitated, and the cardiac individual can be operated upon. (Journal of Prosthetic Dentistry, May 1953, S. W. Cotter and E. J. Budill)
7. The national birth total continued to rise during the first 3 months of 1953, after setting a new annual record of 3,889,000 registered and unregistered births in 1952. Births during the first quarter of 1953 were running about 29,000 ahead of the same period last year, an increase of 3%. March was the tenth consecutive month in which the estimated total births topped corresponding monthly figures for the previous year. The level of births for the first 3 months is at an annual rate of 25 live births per 1,000 population. This is slightly higher than the birth rate for the first quarter of 1952. (P. H. S., Dept. of H. E. W.)
8. One thousand, four hundred and sixty-five Naval Reserve Lieutenants of the Line and Staff Corps on active and inactive duty were recommended for promotion to Lieutenant Commander by selection boards convening in March 1953. There were 1,136 Line Lieutenants, 30 Chaplain Corps, 25 Medical Service Corps, 47 Dental Corps, 67 Civil Engineer Corps, 37 Medical Corps, and 123 Supply Corps officers selected. (Naval Reservist, June 1953)
9. The Public Health Service has announced that the Erie Railroad is to receive a special citation as the first major railroad whose dining cars have all been awarded the Certificate of Sanitation under the cooperative inspection program between the railroads and the Public Health Service. (P. H. S., Dept. of H. E. W.)
10. Intracranial aneurysm and polycystic renal disease occur in association with each other in a significant number of cases. The number of instances in which these 2 disorders have been found suggests that more than

simple coincidence is involved in this relationship. (Am. J. M. Sc., May 1953, N. H. Bigelow)

11. Nisentil hydrochloride, a synthesized analgesic of the piperidine group is considered to be a valuable drug in obstetric analgesia. Its rapid action, relatively short period of maximum effect, its minimal depression of respiration of the infant appear to make it an almost ideal drug in the obstetric field. (Am. J. Obst. & Gynec., May 1953, W.M. Kane)

12. The efficacy of ligation of the hepatic and splenic arteries in the treatment of cirrhosis of the liver complicated by ascites, hemorrhage, or both is seriously questioned. The continued use of the operation is not recommended. (Surg., Gynec. & Obst., May 1953, J. L. Madden)

13. "Arthritis and the Miracle Drugs" is a 32-page pamphlet on rheumatic disease written for the layman. Written in popular style it is directed primarily toward the rheumatic patient, his family, workers allied with the medical profession, and the general public. (P. H. S., Dept. of H. E. W.)

14. Protrusio acetabuli is associated with localized plasticity of the pelvic walls of the acetabulum. It may begin as a bilateral condition in infancy and steadily progress through life; in the later stages there is asymmetric development probably the result of trauma or aggravated inflammation. (J. Internat. Coll. Surgeons, May 1953, J. F. Brailsford)

15. A resume is presented of the author's experience in the surgical care of soft tissue injuries incurred in Korea. (Surg., Gynec. & Obst., June 1953, D. Fisher)

16. The following naval medical officers have recently been certified in their specialty by the American Board of Surgery: CAPT J. R. Weisser (MC) USN, LT R. M. Raber (MC) USNR, and LTJG D. E. Mahaffey (MC) USNR. (TIO, BuMed)

17. Clinical experiences in the use of N-allylnormorphine (Nalline) as an antagonist to morphine and other narcotics in surgical patients are reported in Surgery, May 1953, J. Adriani and M. Kerr.

18. The seasonal and monthly frequency of occurrence in 1,386 cases of proved myocardial infarction is reported. The importance of very hot weather as a precipitating or predisposing factor is discussed. (Am. Heart J., May 1953, H. E. Heyer, H. C. Teng, and W. Barris)

19. Wertheim hysterectomy may be performed on selected cases who have carcinoma of the uterine cervix which is in a clinical stage I, II, or very early III. At present radium and x-ray therapy is being administered within a period of 2 to 5 months prior to operation. (Proc. Staff Meet., Mayo Clin., May 6, 1953, J. O. Fergeson, and J. H. Pratt)

20. A case of Schwannoma of the pharynx with a review of the literature is reported in the Journal of the International College of Surgeons, Apr. 1953, P. Guggenheim.

21. About 85% of patients with peptic ulcer can be treated satisfactorily by medical means. The remaining 15% will require surgical intervention. This group consists of those with complications such as hemorrhage, perforation, and obstruction; a small number who will not or cannot be rehabilitated by adequate medical therapy; those whose ulcers are located on the gastric side of the pylorus. (Postgrad. Med., May 1953, A. Horwitz)

22. The laryngeal swab technic is worthy of adoption as an additional diagnostic tool for the bacteriologic diagnosis of tuberculosis in ambulatory patients when gastric aspiration cannot readily be performed. (Am. Rev. Tuberc., May 1953, A. D. Chaves, L. R. Peizer, and D. Widelock)

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List of Recent Reports Issued by Naval Medical Research Activities

U. S. Naval School of Aviation Medicine, U. S. Naval Air Station, Pensacola

1. A Study of Dynamic Visual Acuity. NM 001 075.01.01, 4 Mar 1953.

Medical Research Laboratory, U. S. Naval Submarine Base, New London, Conn.

1. The Interview: IV. The Reliability and Validity of the Assessment Interview as a Screening and Selection Technique in the Submarine Service. NM 002.006.01.04, 15 Jan 1953.

2. Current Program of Research in Selection of Submarine Sonar Operators. NM 003 041.07.02, 21 Dec 1952.

U. S. Naval Medical Research Unit No. 3, Cairo, Egypt

1. Therapy of Brucellosis in Egypt. NM 007 082.12.03, 1953.

2. The Program of the Department of Virology of the Naval American Medical Research Unit (NAMRU-3) Cairo, Egypt With Brief Reference to Certain Accomplishments. NM 007 082.13.10, 1953.

3. First Report of the Human Intestinal Fluke Heterophyes heterophyes From a Yemen Bat, Rhinolophus clivus acrotis. NM 005 050.39.28, 1953.

4. Isolation of West Nile Virus From Culex Mosquitoes. NM 007 082.13.08, 1953.

Naval Medical Field Research Laboratory, Camp Lejeune, N.C.

1. Evaluation of a Method for the Study of Burn Healing. NM 006 014.04.01, May 1953.

Naval Medical Research Institute, NNMC, Bethesda, Md.

1. A Study of Certain Chemical and Photochemical Reactions of Possible Application to the Sterilization of Plasma. Memorandum Report related to NM 005 052.25, and NM 000 018.07, 7 Nov 1952.
2. A Cardiac Defibrillator. Memorandum Report 52-16, NM 007 081.15, 31 Dec 1952.
3. On the Interaction of Myosin With Adenosine Triphosphate. NM 000 018.04.10, 12 Dec 1952.
4. Observations on Plasmodium huffi Muniz, Soares, and Batista. NM 005 048.01.04, 8 Jan 1953.
5. Failure of Freeze-dried Esophageal Grafts. Memorandum Report 53-1, NM 007 081.15, 8 Jan 1953.
6. Glutathione Protection Against Potassium in Adrenalectomized Mice. NM 007 081.11.05, 13 Jan 1953.
7. The Influence of Previous Infection of Mice with Schistosoma mansoni on a Challenging Infection with the Homologous Parasite. NM 005 048.02.29, 12 Jan 1953.
8. Effect of Age of the Host on Mouse Infections With Schistosoma mansoni With Especial Reference to Cercarial Penetration. Memorandum Report 52-18, NM 005 048.02, 18 Nov 1952.
9. Some Effects of Cortisone on Aortic Grafts. NM 007 081.10.04, 17 Nov 1952.
10. Studies of the Acute and Chronic Toxicity of Germanium. NM 006 012.04.56, 12 Dec 1952.
11. Freeze-dried Aortic Grafts: A Preliminary Report of Experimental Evaluation. NM 007 081.10.05, 13 Jan 1953.
12. Further Studies on the Demonstration of an Enzymatic Factor in Cercariae of Schistosoma mansoni by the Streptococcal Decapsulation Test. Lecture and Review Series No. 52-9, NM 005 048.02, 18 Nov 1952.
13. The Relation of Adrenal Weight to Body Weight in Mammals. Memorandum Report 52-7, NM 000 018.07.19, 31 Dec 1952.
14. A Study of Electrical Potential Differences Across the Normal Aorta and Aortic Grafts of Dogs. NM 007 081.10.06, 19 Jan 1953.
15. Theory of Physical Adsorption. Lecture and Review Series No. 52-12, 25 Nov 1952.
16. Catalyzed Reaction as a First-order Process. Memorandum Report 53-2, NM 000 018.07, 27 Jan 1953.
17. Energetics and Molecular Mechanisms in Muscle Action. I. Outline of a theory of muscle action, and some of its experimental basis, NM 000 018.04.11; II. Statistical thermodynamical treatment of contractile systems, NM 000 018.06.26, 12 Jan 1953.

Naval Medical Research Institute, NNMC, Bethesda, Md. (Continued)

18. Brightness of the Atmosphere. NM 001 056.07.01 and TED PTR AC 223, 11 Mar 1953.
19. The Treponemal Immobilization Test in the United States Navy. NM 005 048.16.01, 12 Dec 1952.
20. Changing Concepts in the Serodiagnosis of Syphilis: Specific Treponemal Antibody Versus Wassermann Reagin. Lecture and Review Series No. 52-8, 7 Nov 1952.
21. Effect of X-irradiation on Weight and Contents of the Rat Stomach, Small Intestine, and Cecum-colon. NM 006 012.04.58, 19 Jan 1953.
22. Studies of the Metabolism of Gallium, IV. Effect of Gallium on Alkaline Phosphatase and Calcification in Vitro. NM 007 081.06.13, 5 Feb 1953.
23. Summaries of Research, 1 July-31 Dec 1952.
24. Sympathetic Activity and Perception: An Approach to the Relationship Between Autonomic Activity and Personality. NM 004 008.04.01, 20 Feb 1953.
25. Some Experimental Approaches to the Therapy of Whole Body Irradiation. Lecture and Review Series No. 53-1, 20 Feb 1953.
26. Physico-chemical Studies on the Components of Thymus Cell Nuclei. Memorandum Report 52-2, NM 000 018.07.14, 31 Dec 1952.
27. Exploratory Studies on Pharmacological Properties of Organ Extracts. Memorandum Report 53-3, NM 000 018.07, 27 Feb 1953.
28. Further Studies in the Relationship of Abnormal and Injury Electric Potential Differences to Intravascular Thrombosis. NM 007 081.10.08, 29 Jan 1953.
29. Bio-Electric Phenomena as an Etiologic Factor in Intravascular Thrombosis. NM 007 081.10.07, 19 Jan 1953.
30. Liver Regeneration in Rats on Diets that Produce Cirrhosis. NM 006 012.07.01, 11 Mar 1953.
31. Defects in Hemostasis Produced by Whole Body Irradiation. Lecture and Review Series No. 52-6, related to NM 006 012.05, 31 Dec 1952.
32. Analysis of Electrophoretic Protein Fractions by the Photoelectric Areameter. Memorandum Report 53-5, NM 000 018.07, 27 Mar 1953.
33. Saurian Malaria in Panama. NM 005 048.01.05, 11 Mar 1953.
34. Physical Adsorption of Gases on Solids. Lecture and Review Series No. 53-2, 11 Mar 1953.
35. The Stability of Purified Fibrinogen. Memorandum Report 53-4, NM 000 018.07, 5 Mar 1953.

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Fifty-fifth Anniversary of the Navy Hospital Corps,
17 June 1953

From: Secretary of the Navy
To: Chief, Bureau of Medicine and Surgery
Subj: Fifty-fifth Anniversary of Hospital Corps, congratulations on

1. 17 June 1953 will mark the fifty-fifth anniversary of the Hospital Corps of the U. S. Navy. It was the first corps established by the Congress to assist the Medical Corps in its vital task of caring for sick and injured Navy and Marine Corps personnel.
2. The heroism, sacrifice and untiring efforts of the members of the Hospital Corps throughout its history have become a legend of valor. Their services during the Korean conflict are now adding another heroic chapter to their history. Their outstanding bravery and devotion to duty is attested by the impressive number of combat medals and awards won by Corpsmen serving in Korea.
3. To all the men and women of the Hospital Corps I extend congratulations on their anniversary and a well done on their services to our country.

/s/ R. B. Anderson

Rear Admiral Herbert L. Pugh, MC, USN
Chief, Bureau of Medicine and Surgery
Navy Department
Washington 25, D.C.

My dear Admiral Pugh:

On the occasion of the 55th anniversary of the founding of the Navy Hospital Corps, I am pleased to extend to its members, through you, the hearty congratulations and best wishes of all Marines. Hospital Corpsmen have served with distinction throughout the world since the establishment of their Corps by the Congress on 17 June 1898. The professional skill, the bravery, and the loyalty of these men have won for them the deep appreciation and respect of military men everywhere, and by virtue of their close association through many years in combat area, the especial high regard of all Marines. The members of the Hospital Corps may be assured of the continued admiration and affection of their comrades in the Marine Corps, along with the sincere hope that our long and happy relationship may continue for many years to come.

Sincerely yours,
/s/ Lemuel C. Shepherd, Jr.
Commandant of the Marine Corps

BUMED INSTRUCTION 1910.2

21 May 1953

From: Chief, Bureau of Medicine and Surgery
Chief of Naval Personnel
Commandant of the Marine Corps

To: COMs all NAVTRACENs; COs all NAVHOSPs, CLUSA; COs all
NAVRECSTAs CLUSA; CGs and COs, all MARCORPS Activities,
CLUSA

Subj: Disposition of enlisted and inducted members by reason of
physical disability or military unfitness; standards and pro-
cedures for

Ref: (a) SecDef Memorandum of 2 Aug 1948
(b) Physical Standards and Physical Profiling for Enlistment
and Induction, Army Regulation No. 40-115 of 20 Aug 1948,
as amended
(c) Chapter IX, NS, MCM, 1951
(d) Title IV of the Career Compensation Act of 1949 (37 USC
271-285)
(e) Chapter 18, ManMedDept

Encl: (1) Certificate relative to full and fair hearing before
Physical Evaluation Board

1. This instruction promulgates standards and procedures for the separation of subject members from the Naval Service who have become functionally incapable of performing useful service. BuMed C/L 50-15, 51-34, and 51-106 are cancelled.

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BUMED INSTRUCTION 6150.9

29 May 1953

From: Chief, Bureau of Medicine and Surgery

To: All Ships and Stations Having Medical/Dental Personnel
Regularly Assigned

Subj: Standard Form 603 (Dental); general information concerning

Ref: (a) BuMed Inst. 6150.7
(b) Advance Change 2-6, ManMedDept
(c) Article 6-66, ManMedDept

1. This instruction promulgates procedures necessary for the accomplishment of Standard Form 603 (Dental), which replaces NavMed-H-4 (Dental Record).

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BUMED NOTICE 6150

2 Jun 1953

From: Chief, Bureau of Medicine and Surgery
 To: All Ships and Stations Having Medical/Dental Personnel
 Regularly Assigned

Subj: Standard Forms 600, 601, 602, and 603 and Form NavMed-1346,
 for use in the Health Record; availability and procurement of

Ref: (a) BuMed Inst 6150.7
 (b) Advance Change 2-6, ManMedDept
 (c) BuMed Inst 6150.9

1. This notice announces the availability of subject forms and sets forth the procedure for their procurement. The provisions of this notice are effective upon receipt. Subject forms are now available upon requisition from District Publications and Printing Offices.

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BUMED INSTRUCTION 6150.10

3 Jun 1953

From: Chief, Bureau of Medicine and Surgery
 To: Ships and Stations Having Medical/Dental Personnel
 Regularly Assigned

Subj: DD Form 689 (Individual Sick Slip), introduction of; and Form
 NavMed-H-10 (Sick Call Treatment Record), modified procedure regarding

Ref: (a) Chapter 16, Section XVI, ManMedDept

1. This instruction sets forth the procedure for the preparation and disposition of the Individual Sick Slip, DD Form 689. Instructions concerning the DD Form 689 are effective upon receipt of the forms which are available at the District Publications and Printing Offices. The modification of the entries on NavMed-H-10 is effective upon receipt of this instruction.

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BUMED NOTICE 5213

4 Jun 1953

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical/Dental Personnel Regularly Assigned
Subj: Reports, recurring; actions concerning
Ref: (a) Art. 23-2, ManMedDept

1. This notice cancels certain recurring reports and exempts certain operating documents from the reports control program. The reports are: MED-3131-1, MED-4200-1, MED-4400-3, MED-4400-6, MED-6222-1, MED-6224-6, MED-7330-4, MED-4070-1, MED-4400-1, MED-4400-2, MED-4400-4, MED-4400-5. The following are considered to be operating documents and are being deleted from reference (a): MED-1770-2, MED-1770-3, MED-1770-4, MED-1770-5, MED-6130-2, MED-6130-3, MED-6320-2, and MED-6320-6.

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AVIATION MEDICINE DIVISION

Air Evacuation of Casualties

For a number of years aircraft of the military services have been used in the humanitarian role of transporting the sick and wounded of the Armed Forces from isolated or inadequately staffed areas or hospitals to rear base areas where hospitalization with adequate facilities and quiet surroundings are available.

The Marines first used aircraft to remove casualties from isolated areas during the Nicaraguan Campaign almost 25 years ago. During peacetime years, crash injuries, hospital cases from distant small air bases, and occasional civilian cases remote from medical attention have been picked up by Army, Navy, and Coast Guard transport-type planes and flown to hospitals. Small-scale air evacuation of wounded proved valuable in the Spanish Civil War and, in the first years of World War II, the armies of Britain, Russia, and Germany developed and employed air transport for

movement of their sick and wounded, and in Russia and Germany particularly, these services developed rapidly--employing transports of their troop carrier and paratroop air squadrons.

Air evacuation of sick and wounded on a large scale had its inception in the Pacific during the Battle of Guadalcanal, when the advance echelon of Marine Air Group 25, consisting of 14 R4D2 aircraft arrived in the South Pacific on 1 Sep 1942, and made the first flight into the combat zone 2 days later. Evacuation of wounded and sick was started immediately, although at that time no medical personnel were available to man the planes. Early in October, medical personnel were added to crews of planes carrying the more seriously wounded and by 1 Nov 1942, medical officers were accompanying the seriously wounded and corpsmen and nurses were aboard the air transports carrying less critically wounded and sick. During 1942 from 3 Sep to 31 Dec, 4,595 patients were evacuated to rear areas. By June 1943, 12,017 patients were transported from Guadalcanal over wide stretches of water.

In January 1943, the South Pacific Combat Air Transport Command (SCAT) was organized with the prime function of air evacuation of patients, which they did, frequently landing and taking off from an air field which was still under enemy fire. During 1943, SCAT evacuated 25,280 patients and during the first 6 months of 1944, 13,677 patients were evacuated. In July 1944, SCAT was disbanded after having evacuated a total of 43,552 patients to rear areas.

On 14 Nov 1943 the Central Pacific Combat Air Transport Service (CENCATS) was organized and on 23 Nov 1943 made its first evacuation flight to Tarawa for the removal of casualties. CENCATS continued to operate as an air evacuation group until 23 Mar 1944 when it was reorganized under the name Transport Air Group (TAG) composed of Army, Navy, and Marine units. On 24 Jun 1944, the first evacuation from Saipan was effected and on 4 Oct 1944, the first casualties were air evacuated by Marine aircraft from Pelilieu.

Due to the large role played by planes in effecting early evacuation of the wounded, the Naval Air Transport Service (NATS) officially organized an air evacuation of patients unit in February 1945 and performed its first duties in evacuation of patients from Iwo Jima. All NATS planes evacuating patients in the Pacific carried a flight nurse and a specially trained hospitalman and all patients were screened at the point of embarkation by a flight surgeon. From the inauguration of air evacuation of patients by NATS until the end of hostilities, NATS planes transported 44,526 patients from the target and forward areas to Guam, Kwajalein, Honolulu, and the U.S.A. NATS evacuated 9,424 casualties or 25% of the 36,000 wounded from Okinawa between 8 Apr 1945 and 20 Jun 1945. A total of 88,078 patients were evacuated in the Pacific, from the Guadalcanal campaign to the cessation of hostilities.

The Naval Air Evacuation Service as conducted by NATS within the continental U. S. transported 9,777 patients in flights during 1944 to August 1945. Following hostilities, NATS planes continued to evacuate patients, 18,300 of them being moved during the 4 months following cessation. The grand total of recorded patients carried by the Navy and Marines during the war and for the 4 months following cessation of hostilities was 116,155.

In separate and distinct operations, the Fleet Logistic Air Wing evacuated from forward areas or moved within the continental limits of the U. S. 92,357 patients up to 1 Jul 1950.

The Army Air Force in the meantime was concentrating its efforts on the evacuation of sick and wounded in the European theater while also giving the Navy and Marine forces help in the Asiatic area. The percentage of patients evacuated by air from forward areas rose steadily until the latter part of the conflict at which time 60% of the evacuated casualties were handled by air traffic. The peak load of the Air Transport Command was reached in August of 1945 when 34,200 patients were flown. This number represents 60% of the 57,000 casualties evacuated during that month. The A. T. C. estimates show that more than 160,000 casualties were handled in the European theater during the war.

Military Air Transport Service (MATC) evacuated approximately 450,000 sick and wounded. However, it is believed that this figure is a combination of statistics compiled from the now defunct ATC and NATS as well as from the records of the more recently established MATC.

In all, it is estimated, conservatively for the sake of preventing duplication, that at least 650,000 sick and wounded casualties have been evacuated by the air branches of the Armed Forces of this country since 7 Dec 1941.

At first glance at these statistics, it would appear that the over-all operation of air evacuation of casualties had been from the beginning of hostilities a well-planned, centrally controlled maneuver. This, however, was not the fact. Air evacuation was initiated and operated by local commands, force, and theater commanders. It was not until July 1944 that any over-all policy as to standardization of equipment and related matters was put into service-wide use, and until January 1945 the evacuation of casualties was only a secondary mission of any air command. On 10 Jan 1945, the Chief of Naval Operations established the first Air Evacuation Wing whose primary mission was the evacuation of casualties during and immediately subsequent to tactical operations, with a secondary mission of air transportation for special and convalescent patients.

During the fall of 1949, the Secretary of Defense set forth a policy whereby all casualty evacuations would be by air where at all possible and at present this is an accomplished fact in both the European and Asiatic areas. This establishes air evacuation as the method of choice for moving patients.

The use of air evacuation for casualties is provided for in the organizational planning of each service. This is further complemented by being incorporated in the medical plan for each tactical operation. Facilities normally under the theater commander are made available at advance bases to be on call by the task force commander when landing fields, or seaplane landing areas are available. Aircraft are specially equipped for evacuation of casualties and flight medical personnel are provided. Air evacuation is under the control of the task force commander who establishes the air evacuation policy through the task force medical officer in the medical plan. In amphibious landings and subsequent operations, the landing force medical service delivers casualties to air evacuation units at aircraft landing areas in numbers and at times designated by the task force surgeon. A flight medical section from the air evacuation unit is established in the vicinity of the aircraft landing area. Casualties designated for air evacuation are received by this unit and processed to determine suitability of each casualty for air evacuation.

The removal of patients by air from theaters or bases greatly reduces the quantity of medical supplies, hospital equipment, food, and other Class I supplies, and the number of medical and nonmedical personnel that it is otherwise necessary to transport to the theater or base. From 250 to 500 patients, depending upon the type of transport airplane employed, can be evacuated in less than 48 hours from a theater 3,500 miles away to the zone of the interior by the use of 20 transport airplanes. Yet, to hospitalize this number of patients requires several trainloads of shiploads of equipment initially, and many tons of all classes of supplies each week for the care and maintenance of patients and medical personnel, as well as additional requirements of a large number of Medical Department officers, nurses, and enlisted medical men.

The attainable speed of air transportation of the sick and wounded will decrease evacuation time and reduce the number of fatalities incident to transportation, providing that cases for evacuation are properly selected prior to, and properly cared for during, the actual movement.

In general, no other mode of transport approaches the degree of comfort offered the patient by the airplane. The discomfort, and actual danger involved in certain types of cases, may be circumvented by low-altitude flying or by the administration of oxygen enroute. If air superiority is maintained, the airplane represents the safest means of transportation.

The morale of the entire fighting force is markedly elevated by the knowledge that wounded can be removed within a matter of a few hours, rather than days, to a hospital where excellent medical facilities are available.

In aircraft converted for transportation of casualties, considerable treatment can be administered enroute. Examples: readjustment of splints;

administration of stimulants, sedatives, plasma, and other medication; arrest of hemorrhage; treatment of shock; and most important of all, administration of oxygen when indicated.

Aircraft utilized for evacuation are employed in their forward movement, for delivery of supplies, including medical supplies to units functioning in the combat zone.

Institution of evacuation by air within the combat zone will transfer the heavier treatment load from mobile installations of the combat zone to fixed installations of the communication zone or zone of the interior.

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Course of Instruction in Aviation Medicine

A new class in Aviation Medicine will convene at the U. S. Naval School of Aviation Medicine, Naval Air Station, Pensacola, Fla., on 5 Oct 1953. The course will consist of approximately 6 months of academic instruction and flight indoctrination for those who meet the qualifications. The class will be limited to 30 student medical officers of the Regular Navy and Reserves of the rank of lieutenant commander and below.

Aviation Medicine offers diversified opportunities for naval medical experience and, hence, provides an excellent background for a career in naval medicine. Duties with aviation units afford general medical experience in addition to certain special opportunities for experience in otolaryngology, ophthalmology, physiology, and air evacuation techniques. Because aviation units are usually based on large ships or air stations, better than average experience in general medicine, surgery, and industrial medicine is afforded than is usually found outside naval hospitals. Such experience is highly desirable, even for those who expect ultimately to seek certification in a specialty other than Aviation Medicine.

In certain specialties such as otolaryngology, ophthalmology, psychiatry, and research, much of the experience with aviation units is directly applicable, and the course at Pensacola provides special academic instruction in these fields. In addition, special instruction is provided in the medical aspects of atomic warfare, in the problems of acceleration including indoctrination of the human centrifuge, and in the effects of flight at high altitudes. Training in the use of oxygen at high altitude and in the use of special emergency equipment is also included. Instruction is given in certain basic techniques in research which are very often highly useful in solving operational problems in the field.

Flight surgeons in the past have made and are continuing to make definite contributions to the advances in the field of aviation.

Medical officers wishing to enroll for the course in Aviation Medicine should apply by official correspondence to the Chief of the Bureau of Medicine and Surgery, Aviation Medicine Division, Navy Department, Washington

25, D.C., and include in the request the following agreement of obligation: "I agree to remain on active duty for one year following completion of the course or for six months beyond my obligated service, whichever is longer."

All those desiring additional information concerning the course are urged to address inquiries to the afore-mentioned address.

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Certification of Specialists in Aviation Medicine

As most of you know, the Aviation Medicine Section for the American Board of Preventive Medicine is a reality and applications for certification in that specialty are now being processed.

An advisory group consisting of 2 U.S. Navy, 2 U.S. Air Force, and 6 civilian flight surgeons representing both military and civil aviation medical fields has been appointed and is assisting the Membership Committee of the Board in determining the eligibility for certification of applicants.

Instructions concerning eligibility, application, fees, et cetera are contained in the Bulletin of the American Board of Preventive Medicine, Incorporated, Third Edition, 1953. This publication, and application blanks for the board can be obtained by a written request to the American Board of Preventive Medicine, Ernest L. Stebbins, M.D., 615 North Wolfe Street, Baltimore 5, Md., or the Bureau of Medicine and Surgery, Aviation Medicine Division (Code 536), Navy Department, Washington 25, D.C.

It is suggested that all flight surgeons who consider themselves eligible for certification and are interested in belonging to the Founders Group apply at an early date, as 1 July 1954 is the deadline for receiving applications of this category. Others who are interested and believe that they qualify for certification by examination are requested to apply at an early date.

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Air Shipment of Pathologic Specimens

There have been recurring violations of postal regulations relative to the shipment of pathologic specimens by way of the U.S. Postal System. Although the violations have not been numerous, a few are considered to be of such potential danger as to require a review of the existing pertinent regulations.

The following is quoted from a copy of a recent report received at the Bureau of Medicine and Surgery: ". . . a mail bag tagged, 'Official Essential Air Mail,' smelled strangely of ether in flight. Investigation at the hospital revealed the cause. A check of Papanicolaou vaginal smears that had been submitted to the laboratory in 50 percent ether, 50 percent alcohol

fixative revealed one specimen had been submitted on the date in question. It had been reported by the laboratory as dry on arrival. It is assumed that the container was not tightly sealed and the highly volatile and penetrating ether mixture had escaped with change in altitude during flight."

Mailing laboratory specimens in volatile, flammable, explosive fixatives represents a breach of postal regulations and is a hazard to flying safety. The usual violations, however, are those presenting public health hazards. Instructions concerning the preparation and shipment of laboratory specimens are covered by the Manual of the Medical Department, Chapter 22, Article 39 (2); BuMed Inst. 6510.2; and BuMed C/L 51-46 which is currently being superseded by a BuMed Instruction. All those responsible should review available civil as well as military regulations covering the shipping of laboratory specimens.

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Defects Noted on SF-88's Submitted to BuMed:
April and May 1953

Omissions	1162
Excess Copies	1011
Lack of Copies	25
Carbon Copies not Legible	121
Carelessness in Recording Results	24
Failure to State Flight Status (Item No. 17)	145
Not Fully Explaining Dental Defects of NavCad Applicants	15
Refractions not Properly Recorded	14
Not Leaving Right Side in Column 73 for BuMed Endorsement	213
Failure to State Aviator's Service Group in Recommendation	27
No Reason Given for Hospitalization	122
Not Clarifying or Going into Enough Detail Regarding Medical Defects	122
Failure to Submit SF-89 (Medical History Sheet)	2

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1953 Annual Aero-Medical Convention

The twenty-fourth annual meeting of the Aero-Medical Association in Los Angeles, on 11, 12, and 13 May was the meeting place for many U. S. Navy flight surgeons and the reviewing of old acquaintances among inactive reserve officers who still retain more than a passing interest in aviation medicine.

Naval flight surgeons from all sections of the country, as well as from fleet units and foreign stations, were "educated" by papers concerning all

phases of aviation medicine and a colorful array of commercial and scientific exhibits. The Navy displayed a new automatic ejection seat belt release device, a new small automatic oxygen regulator, a pictorial display of the human retina during various phases of positive acceleration and a factual telemetering demonstration by Commander N. L. Barr (MC) USN of the Naval Medical Research Institute. The telemetering demonstration was accomplished twice daily by transmitting from an aircraft in flight, impulses that were received and recorded as graphs at the exhibit space in the Biltmore Hotel. The recordings revealed respiration rate and volume, pulse rate, electrocardiogram and electroencephalogram and body and skin temperatures. The Navy exhibits were well received by the press resulting in daily newspaper articles, a feature magazine story and radio and television interviews and showings.

On the final day, Rear Admiral Bertram Groesbeck, Jr. (MC) USN, Commanding Officer of the National Naval Medical Center, was installed as the President of the Association for the following year, and Captain Wilbur E. Kellum (MC) USN, Commanding Officer of the Naval Medical Research Institute, was presented with the Lyster Award for outstanding achievement in the field of aviation medicine. Captain J. C. Early (MC) USN, U. S. Naval Air Station, Jacksonville, Fla., was selected as a Fellow to the Association.

The Silver Anniversary or twenty-fifth annual meeting of the Association will be held at the Statler Hotel in Washington, D. C., on 29, 30, and 31 March 1954. It is hoped that many of our flight surgeons are planning to attend.

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Legion of Merit Award

The Legion of Merit with the Combat "V" authorized has been awarded to Commander Gennaro Basilicato (MC) USN. The award was presented to Commander Basilicato for exceptionally meritorious conduct in the performance of outstanding services to the Government of the United States as flight surgeon and senior medical officer of a Marine Aircraft Group during the period of 16 November 1951 to 23 May 1952. Commander Basilicato is now the Senior Medical Officer at the Naval Auxilliary Air Station, Chincoteague, Va.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Navy Medical School, National Naval Medical Center, Bethesda 14, Maryland; giving full name, rank, corps, and old and new addresses.

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NOTICE

The Index to Volume 21, Nos. 1-12 of the News Letter will be printed separately and will also be mailed separately to the Distribution List.

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PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
WASHINGTON 25, D. C.

OFFICIAL BUSINESS

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